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# ELECTRO-CHEMISTRY: SODA POWERED BATTERY

*Written by Lucy Ikpesu*

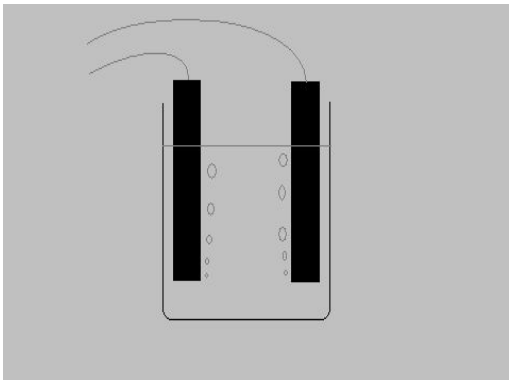
**CLASS DESCRIPTION**
In this class, students will that experiment the relationship between electrical and chemical reaction.

**TOTAL CLASS TIME**: 100 minutes

**CLASS OUTCOME**
By the end of this class, students will creates electricity using coke acts as an electrolyte.

## INTRODUCTION

Electrochemistry is a branch of chemistry that deals with the relations between electrical and chemical phenomena. It deals with the difference between chemical reactions and electricity. This studies chemical changes caused by the passage of an electric current across a medium, as well as the production of electric energy by chemical reactions.



The photo below shows a battery made by placing a strip of copper and a strip of aluminum into a glass of Coca-Cola. The aluminum-copper-coke battery can produce about three quarters of a volt. This type of battery can be called home made battery. It creates electricity because the coke acts as an electrolyte for the copper strip and the aluminum strip.

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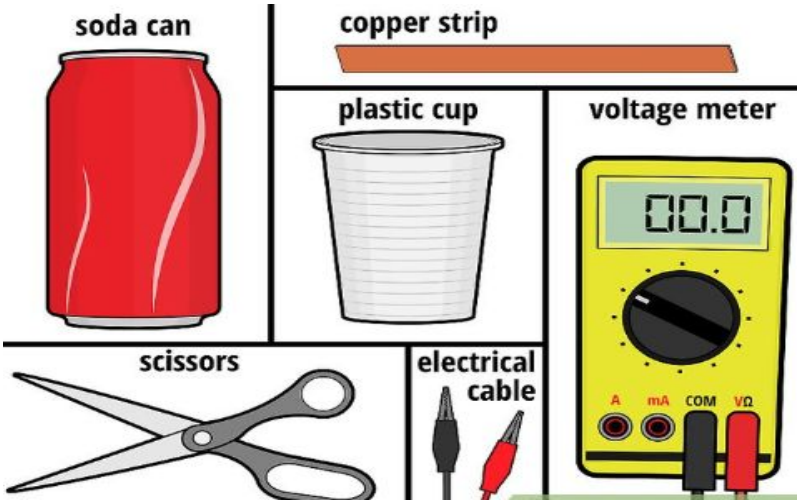
The aluminum strip can be made by cutting open am empty coke can. You will need some sandpaper to sand off the paint and plastic coating from the aluminum before using it. Or you can get strips of aluminum already free of coatings from a hardware store.
The copper strip can be gotten from a hardware store, or you can use a bunch of copper wire.
NOTE: The more surface area exposed to the liquid, the more electrical current is produced.

## MATERIALS NEEDED

1. Coke (Liquid)
2. Aluminum strip (coke can)
3. Copper strip ( or Copper wires)
4. plastic cup
5. Scissors
6. Aligator clips
7. Multimeter



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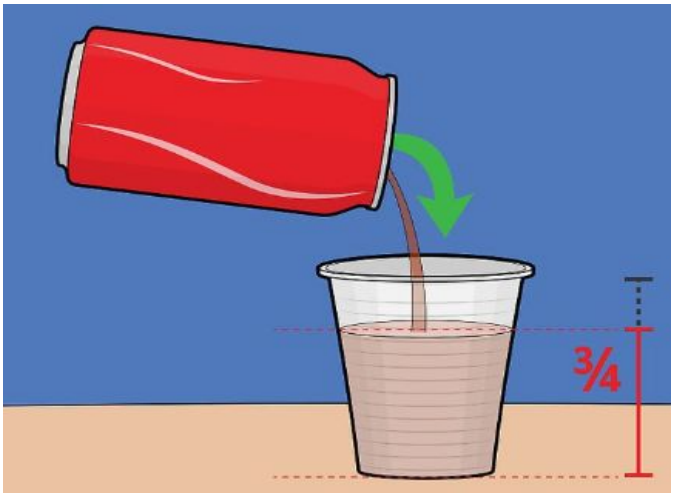
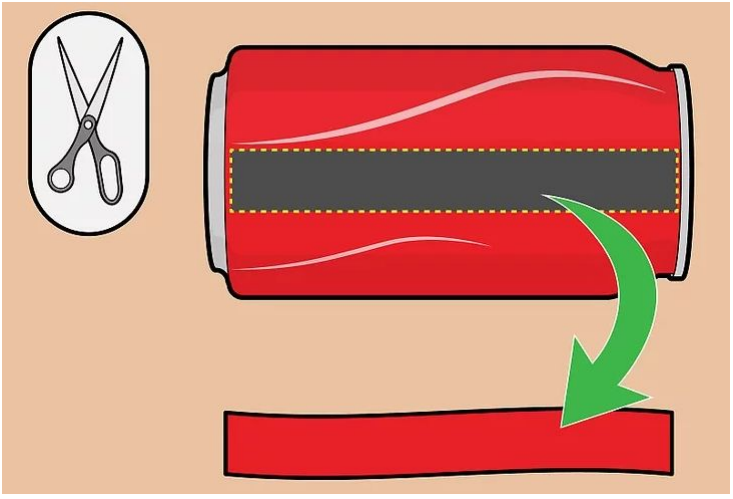
## PROCEDURES

**Step 1**: Fill the plastic cup with coke (¾ full).
The cup doesn't have to be plastic, it just has to be non-metallic. Paper cups will also work.




**Step 2:** Empty the coke can completely.

**Step 3:** Cut a strip of aluminium from the coke can. Cut a strip from the side of the coke can, it should be slightly longer than the plastic cup's height; bend the top of the strip and let it hang over the edge of the cup and into the fluid.
Any aluminum strips can also be used instead of cutting the can.
NOTE: Aluminium foil is not an effective replacement for an aluminium strip; it can't use!



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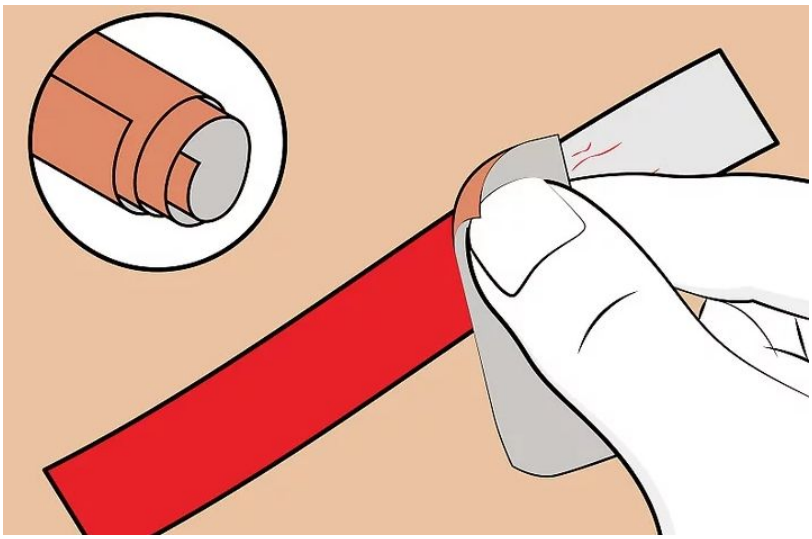
**Step 4:** Sand the aluminum strip using a sandpaper. This will only be needed if the aluminum strip is gotten from the coke can. The colored coating on the coke alunimiun strip needs to be sand off (i.e. paint, plastic) using the sandpaper.
This can be skipped if the aluminum strip is new.



**Step 5:** Get a strip of Copper or copper wire. Ensure that it's slightly longer than the plastic cup's height; bend the top of the strip and let it hang over the edge of the cup and into the fluid.

**Step 6:** Place the strips (Aluminium and copper strip) into the coke. Place them across from each other in the cup and ensure the strips do not touch each other.

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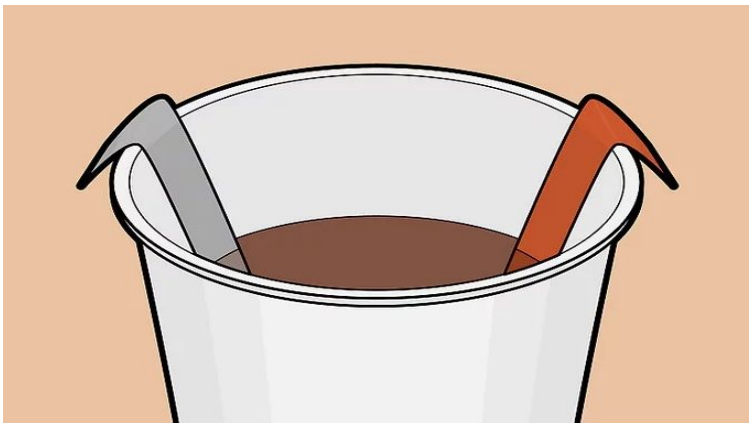
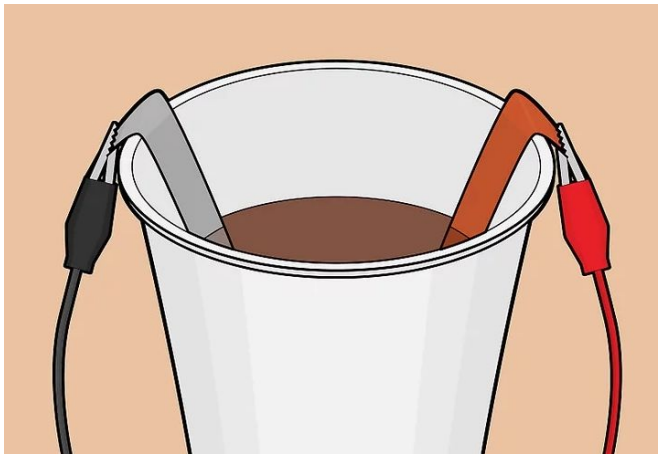


**Step 7:** Attach the wires (with alligator clips) to metal strips. Do not let the alligator clips touch the coke. It doesn't matter which colour of wire attaches to which strip.



**Step 8**: Test the battery. Connect the two wires from each metal strip to the multi-meter (voltmeter). The meter should read your battery's voltage at roughly 3/4 of a volt.

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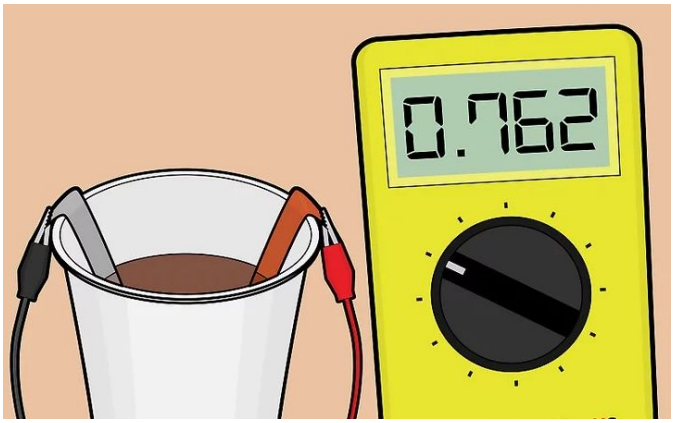


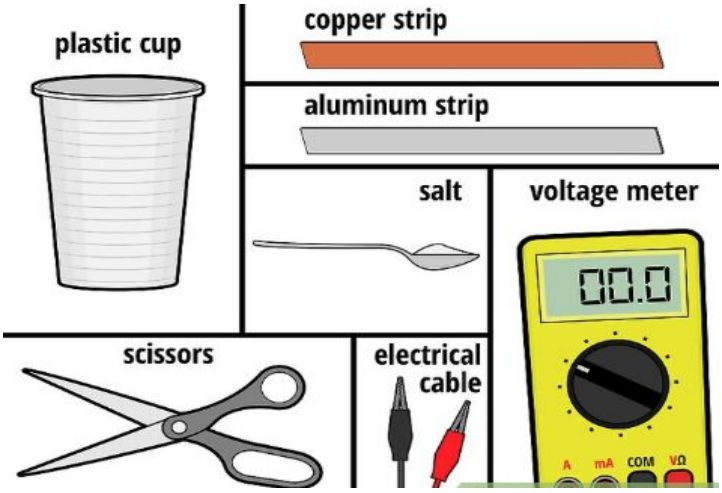

## OBSERVATION/DISCUSSION

A LED bulb can be connected directly to the wire for it to light up. The voltage on the LED bulb may be low due to the amount of voltage produced by the battery.
To use your homemade battery to power a device, connect the alligator clip wires to the metal strips inside the battery container.

NOTE: If you are unable to connect to the device using alligator clips, you'll need the wires without clips at the ends.

## RECOMMENDATION

This same process can be used to create a **saltwater-powered battery**. Instead of using a coke as the liquid, use a salt water solution. Follow the same procedure as stated above. See the materials needed below;



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At the end of building a saltwater battery, compair the voltage generated to that coke powered battery. There might be a slight difference in the result.

**To make a coke-powered or a saltwater-powered battery stronger**;

- Fill multiple plastic cups with the metal strips/fluid solution.
- Connect the metal strips on each cup with the opposite type of strip on the cup next to it using alligator clip wire — for example, a copper strip should be connected to an aluminum strip.
- Use three or more saltwater or coke batteries

This should be able to power a simple device such as a LED bulb or LCD clock.

## REFERENCES

http://sci-toys.com/scitoys/scitoys/echem/batteries/batteries.html
https://www.wikihow.com/Make-a-Homemade-Battery